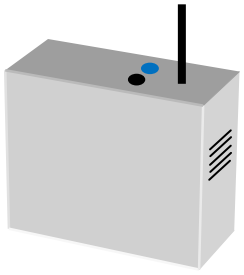
ECOmmersion

User Manual



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ECOmmersion

Congratulations on your purchase of ECOmmersion, the intelligent proportional controller that heats your water using the surplus renewable energy that you generate. This manual will help you to understand how it works and what the different elements on the display mean. ECOmmersion is an automatic solution, there is no need for you to adjust anything.

Safety Information

All safety warnings give specific details of the potential danger/warning present and indicate how to reduce risk of injury, damage and electric shock resulting from improper use of the device.
Carefully observe the following instructions:

- Installation and maintenance must be carried out by a competent person, in compliance with the manufacturer's instructions, the latest edition of the IEE wiring regulations and local safety regulations.

  If in any doubt, consult a qualified electrician.

- The device must be disconnected from the power supply before carrying out any installation work.
- A minimum of 150mm clearance must be provided each side of the device to allow adequate ventilation.
- Regulations require that the device is earthed.
- Do not remove the device cover while the power supply is connected.
- Do not operate the device with the cover removed.
- Do not attempt to repair or replace any part of the device.
- Do not touch the device with any wet part of the body.
- All Maintenance operations must be carried out by a qualified technician.
- This appliance is not suitable for outdoor use.
- The manufacturer accepts no responsibility for any damage or injury caused by improper use or failure to comply with these instructions.

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Introduction

Micro generation systems are at their most efficient when all of the generated energy is used at the point of generation, i.e. within the household where the generator is sited. This results in the minimum possible use of imported energy.

ECOmmersion will continuously monitor micro-generation energy production together with household energy demand and then ensure that any surplus energy that would have been exported is stored for later use. Since every home requires hot water, and hot water stores energy, it makes a lot of sense to use the surplus energy to produce hot water. ECOmmersion will capture surplus energy as it is generated which then stays stored in the form of hot water. ECOmmersion works by continuously monitoring the power being imported or exported to the property and diverts sufficient power into the hot water system in order to keep the exported power to as near zero as possible. Priority is always given to the energy demands of the household appliances and the surplus energy that would have otherwise been exported is stored in the hot water system.

ECOmmersion uses a standard immersion heater element to deliver the excess electrical power generated by the PV system to the hot water cylinder.

If your hot water is normally heated using gas or oil ECOmmersion will work in conjunction with your normal water heating system. On days when there is insufficient energy available from the PV system to fully heat the water your gas or oil system will 'top up' the hot water to the required temperature. Therefore the more energy that is available from the PV system on a given day, the less gas, oil or imported electricity will be needed to provide hot water.

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What is ECOmmersion?

The ECOmmersion system measures how much power is flowing through your electricity meter and in which direction. When you are generating a surplus it diverts power to the immersion heater, always adjusting the level so as to minimise the amount going back to the grid.

How does it work?

ECOmmersion responds quickly to changes in how much electricity you use in your house and to changes in the sunlight; so you can turn electric appliances on and off in your house without worrying about it interfering with ECOmmersion. For example - when you turn the kettle on, or when the sun goes behind a cloud, ECOmmersion makes the adjustments needed to send the surplus power into your hot water tank. ECOmmersion is entirely automatic. Once you turn it on, it does all the work on its own. For full peace of mind you can monitor its activity using the included wireless display.

Does ECOmmersion really work?

By installing an ECOmmersion system in your solar powered home, you will quickly notice its influence on your usual hot water bills. You will always benefit from using your 'home grown' electricity to provide hot water for your household, maximising the use of your Solar PV system or Wind Turbine.

In our test home virtually all the hot water needs of the household were met by ECOmmersion throughout the spring, summer and autumn seasons with significant contributions being made on sunny days during winter. Indeed, the owners of the property are now installing a power shower to make full use of all the hot water they generate.

What do I need to do?

Once installed sit back and enjoy the savings.
If you ever need to electrically heat your water just press the Blue Override On button – it will remain on for 60min (blue LED on) or until you press the Black Override Off button

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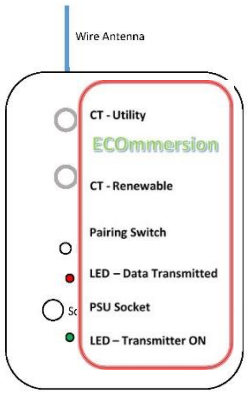
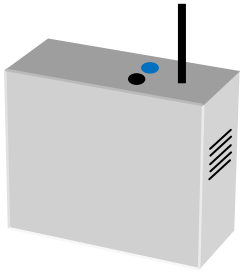
The Component Parts

ECOmmersion is made up of three main components which include **1. A Sensor / Transmitter Unit**, (with a power supply unit and two CT's). **2. A Power Control Unit** (with adjustable Antenna) and **3. A Wireless Display Unit** (with a power supply unit).

1. Sensor / Transmitter Unit	2. Power Control Unit	3. Display Unit
Best Location: near consumer unit.	**Best Location:** next to hot water tank / immersion isolator switch in airing cupboard.	**Best Location:** anywhere you can keep an eye on it!
 Temporary Drawing to be replaced by photograph.	 Temporary Drawing to be replaced by photograph.	
 CTs – May differ from the photograph	 Antenna	 Power Supply Unit – May differ from the photograph

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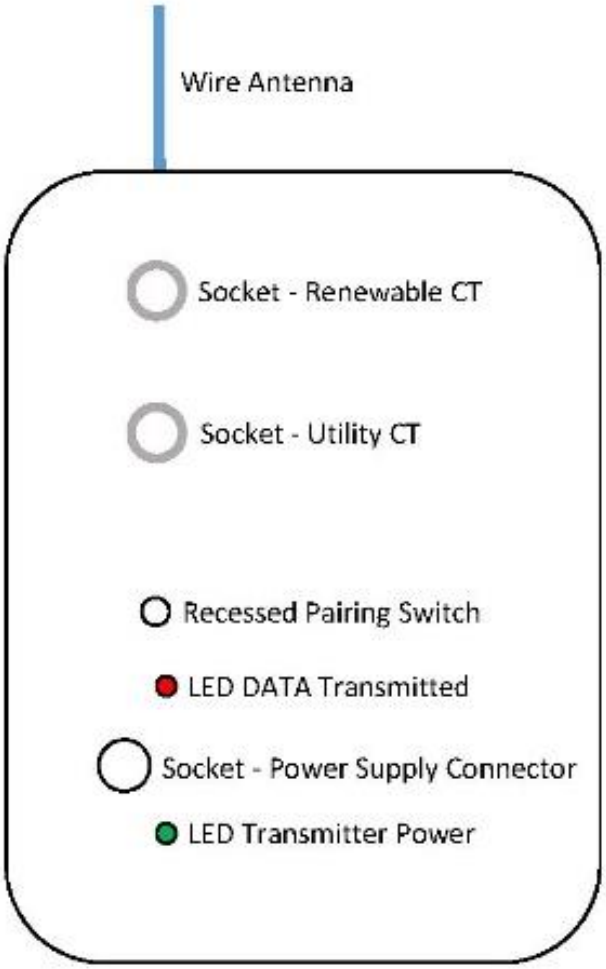
1. Sensor / Transmitter Unit

Sensor / Transmitter Unit connections & Display



Status LEDs and connections.

	Description	Meaning / Action
	Green LED illuminated.	Receiver is getting power.
	Red LED flashing	The LED flashes every time data is successfully transmitted.
	CT sockets	Top Socket – plug in Renewable CT. Lower Socket – plug in Utility CT.
	Power Supply Socket	Plug lead from mains adaptor into here.
	Recessed Pairing Switch	Use a 'tooth pick' or similar to operate.
	Wire Antenna – Transmitted signal forms a 'doughnut' shape around the antenna – with maximum signal strength at roughly 45deg inclined to the wire.	Keep as straight and aim maximum signal toward the Power control Unit.

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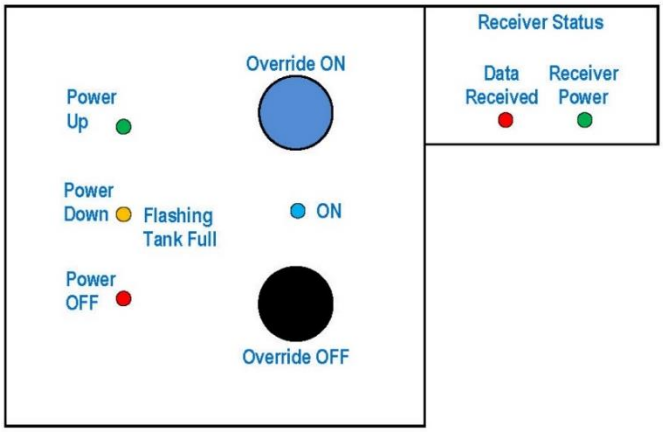
2. Power Control Unit display and control buttons.



Pressing and holding the **Override On** button for 3 seconds will supply full power to the immersion heater for approximately 1 hour. This can be canceled at any time by pressing **Override OFF**.

Pressing both buttons simultaneously will engage Pairing Mode. Cancel by pressing **Override OFF**.

ECOmmersion Status LEDs

	Description	Meaning
○ ○ ○ ●	Red LED constantly illuminated.	ECOmmersion is in automatic standby mode – no power being supplied to the immersion heater.
● ○ ○ ○	Green LED illuminated.	Power to the immersion heater is being increased.
○ ● ○ ○	Yellow LED illuminated.	Power to the immersion heater is being decreased.
○ ✹ ○ ○	Yellow LED flashing.	The hot water tank is full and ECOmmersion is testing to see if there is further demand for power.
○ ○ ● ○	Blue LED illuminated.	ECOmmersion has been placed in OVERRIDE mode. Full power will be supplied to the immersion heater for 60min OR until the tank thermostat indicates that the hot water is up to temperature.
✹ ✹ ✹ ✹	Green, Yellow, Blue and Red LEDs all flashing at the same time.	ECOmmersion has lost contact with the sensor unit.
✹ ✹ ✹ ●	Yellow, Green and Blue LEDs flash in sequence with Red LED illuminated.	ECOmmersion has detected an **OVERCURRENT FAULT**. It is **VERY IMPORTANT** that the immersion heater is tested and the fault found and rectified BEFORE switching back on.
● ○ ○ ●	Green LED and Red LED illuminated.	ECOmmersion has been placed in 'Pairing' Mode by pressing the Blue and Black buttons simultaneously.

Receiver Status LEDs

✹ ●	Green LED illuminated. Red LED flashing	Receiver is getting power. The LED flashes every time data is successfully received.

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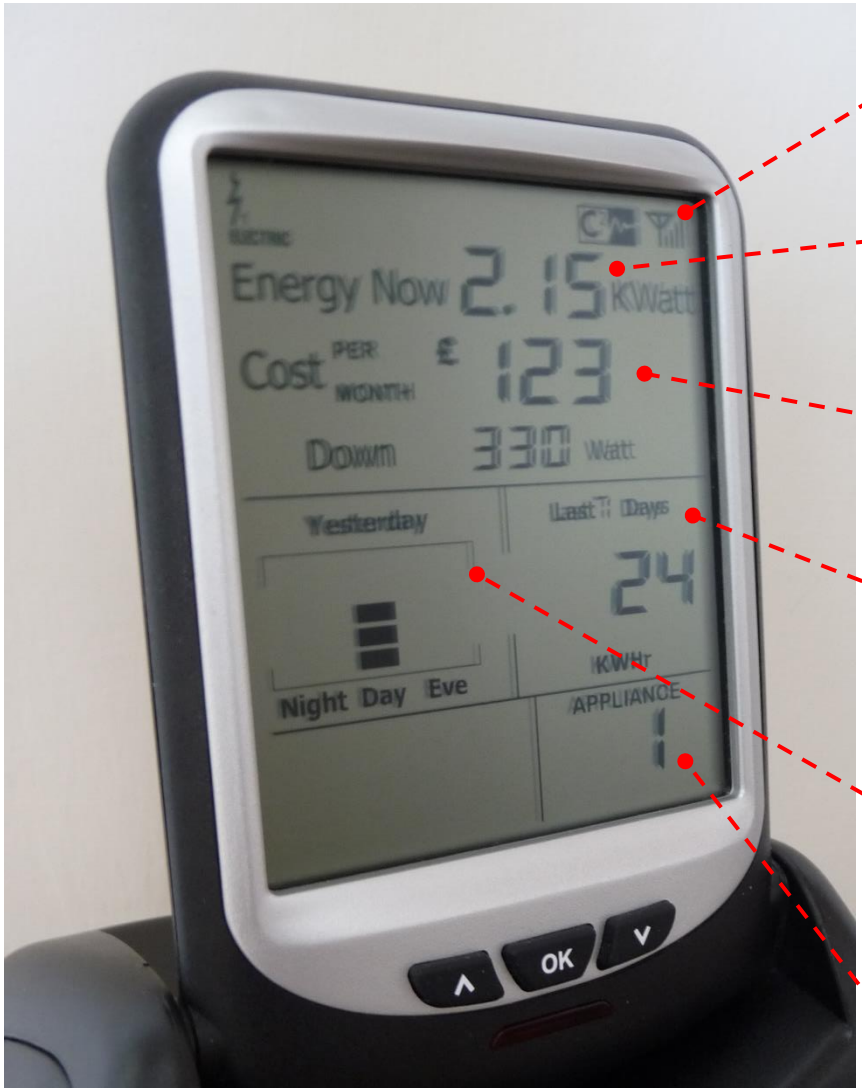
3. Display Unit



Aerial icon confirms information is being read from the transmitter

This shows the amount of surplus energy being diverted into your immersion heater.

This shows the cost SAVING if ECOmmersion was to continue to divert this amount of energy over the time shown.

This shows you your accumulative energy in kWh and scrolls every ten seconds between the last day, the last seven days and the last 30 days. You can also scroll through these using the OK button

This graph shows you how much energy you have used between 7am to 3pm during the previous day, 3pm to 11pm the previous evening and 11pm to 7am the previous night

ECOmmersion has been set as Appliance 1.

The display is updated every 6 seconds and the screen will show an average of the power flowing during that time period. Although there is a 6 second delay in displaying the power diverted, ECOmmersion itself will have made many adjustments (approx. 30) in that same 6 seconds.

For further details about setting up your display unit please consult the separate Monitor User Guide.

For further details about additional monitoring sensors and the preferential rates available to you as a registered ECOmmersion Customer please contact:

Office Tel:01245320454 or
info@ECOmmersion.co.uk

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Troubleshooting

Problem	Possible Cause	Action	Test & Comments
Water is not hot	Your Renewable energy has not generated any electricity or there has not been sufficient surplus energy to divert to you immersion Heater.	First check your Renewable energy source is operating correctly, Use the 1 hour boost to heat your water if hot water is required or your Gas boiler if this your preferred option.	Always check your wireless display to see if your system is performing correctly
Water is not hot enough	The Immersion's integral thermostat is set too low	Check and adjust your Immersion thermostat to the desired temperature.	All ways set the thermostat to a safe working temperature to avoid the risk of scolding
ECOmmersion has lost contact with the sensor / transmitter unit.	a) Power to the unit has been lost.	Check for loose power connection – re-insert plug.	Look for illuminated LEDs
	b) The antenna has been bent out of position.	Straighten and return antenna to position.	
	c) Another transmitter with the same pairing code.	Place the Power Control Unit into 'Pairing Mode' by pressing the Blue and Black buttons simultaneously – the Red and Green LEDs will illuminate. Go to the Sensor / Transmitter unit and using a 'tooth pick' or similar press and hold the 'pairing' switch until the Red LED flashes slowly. Return to the Power Control Unit – it will return to automatic mode as soon as it is successfully paired with a new code.	Look for red flashing LEDs on both units.
Display is not showing the expected information. E.g. the display is completely blank or **Energy NOW** shows **- - -**	a) If the screen is completely blank there is no power to the display unit.	Check the power and connections.	
	b) If **Energy NOW** shows **- - -**Then there has been a power 'outage'.	Press the **^** button to select Appliance 1 (bottom RH corner of the display) If Appliance 1 remains blank it may need re-'pairing' with ECOmmersion. Using a 'tooth pick' or similar press and hold the 'pairing' switch on the bottom of the power control unit until the Red LED flashes slowly. Then follow the instructions in the Monitor User Guide.	

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ECOmmersion Limited Three Year Warranty

RG Installations warrant this product for a period of 3 years from date of purchase for all defects in material and workmanship, subject to the provisions described below.

If this product fails to perform as described within the warranted period, it will be repaired or replaced with the same or functionally equivalent product by RG Installations, at its discretion, free of charge provided you:

1. Return the failed product to RG Installations, properly packaged against damage in transit, with shipping charge prepaid, and
2. Provide RG Installations with proof of the original date of purchase. Returned or replacement products will be returned to you with shipping charges prepaid by RG Installations.

Replacement products may be refurbished or contain refurbished materials. If RG Installations, at its sole determination, is unable to repair or replace the defective product, it will refund the depreciated purchase price of the product.

The warranty does not apply if, in the judgement of RG Installations, the product has failed because of damage during shipment, handling, storage, accident, abuse, misuse, or if it has been used or maintained in a manner not conforming to product manual instructions, has been modified in any way, or has had any serial number removed or defaced. Repair by anyone other than RG Installations or an approved agent will void this warranty.

The maximum liability of RG Installations under this warranty is limited to the purchase price of the product covered by the warranty.

The end customer or the reseller from whom the end customer originally purchased the product, must obtain a return authorisation number from RG Installations, before returning the defective product

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ECOmmersion Declaration of Conformity

RG Installations of 28 Cutlers Road, Saltcoats Industrial Estate, South Woodham Ferrers, Chelmsford, Essex, CM3 5XJ, declare that the listed products comply with the relevant requirements of the following EU Directives.

The equipment is compliant with the following harmonised standards and relevant sub-sections:

Compliance:

EN 60730-1:2011 Automatic electrical controls for household and similar use.
EN 60730-2-11:2008 Particular requirements for energy regulators.
EN 61000-6-3:2007+A1:2011 Electromagnetic compatibility (EMC) - Generic standards.
EN 61000-3-2:2006+A1:2009+A2:2009 Limits for harmonic current emissions.
EN 61000-3-3:2008 Limitation of voltage changes, voltage fluctuations and flicker.

This equipment also meets WEEE directive.
To register for the 3 year warranty,
send the following details to warranty@ECOmmersion.co.uk within 30 days of purchase:
Your installer will have provided you with:

- Place of Purchase
- Date of Purchase
- Serial number (in format WO##### / ####)
- Name and contact details of **installer** (email, address, phone).

Richard Smith,
Manager
RG Installations
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